THE CHOICE OF ISTHMIAN CANAL ROUTES.

BY JOHN T. MORGAN, UNITED STATES SENATOR FROM ALABAMA.

If a canal on either route were in all respects equally feasible and practicable and equally profitable as a money-earning investment, as a canal on the other, there are certain advantages to the United States in the selection of the Nicaragua route that must decide the choice in its favor. Among the most important of these advantages is the fact that, within the canal belt in Nicaragua and Costa Rica, there are not more than two thousand inhabitants, while there are more than thirty thousand within the canal belt at Panama. At Brito, there is no collection of people; at Greytown, not over 1,500 people; and between these points, a distance of 183 miles, the country is very sparsely inhabited. The occupancy of this belt, and of the towns or cities that will exist there, will be under the immediate control of the United States and we can prohibit the location there of any persons we may consider unworthy, or dangerous to the peace or health of the people in the canal belt, or to the security of the canal property. This situation is so important that its value cannot be estimated in money. It is an indispensable element of safety.

The preservation of a canal with locks, and of vessels navigating it, against malicious interference must require the greatest vigilance, authority and police power to be in constant exercise in the canal belt. This would be extremely difficult and hazardous in a canal belt located in an unfriendly country or among a turbulent and lawless people. The first requirement of security, therefore, to be kept in view in the selection of the route of the canal, is the good-will of the people and the government of the country where it is located. Without this, there would be such constant friction as to increase the cost of protecting the canal and to endanger the peaceful relations of the two countries.

This is the first effort, in the history of the world, of one government owning and controlling a canal or great highway through the heart of the territory of another sovereign power, and there is no experience to guide us in projecting a plan or scheme of control that will meet all the necessities of the future. That we shall find occasion to correct some features in any arrangement that may be made now, is almost certain; and, whether we are engaged in laying the foundations of such a plan or in correcting errors or adjusting difficulties that may hereafter discover themselves, it is necessary that there should be sincere and friendly co-operation between the governments and the people concerned in the enterprise.

In view of these conditions, which are vital features of this new effort of nations to create new advantages to themselves, every fact is important that tends to give greater security to the peaceful and successful accomplishment of this great work and to its permanent maintenance.

If Colombia should concede to the United States such canal rights and privileges as are described in the Hay-Pauncefote treaty, an event that is not expected, it would place the police control of the capital of the department of Panama under the superior power of the United States, while it would still maintain the sovereignty of Colombia over that department, under the guaranty of the United States. This situation would greatly aggravate the ill-will which the people of Panama have long felt against the United States of America, and had its origin when we, through our treaty of 1846 with Granada, guaranteed the sovereignty of Colombia over Panama. We made that engagement to secure transit rights across Panama, and Colombia insisted on this guaranty in order to keep Panama subject to her authority.

Panama is an isthmian state with a narrow base connecting her with the other Colombian states. Their communication with Panama is almost exclusively by sea, and there is very little commercial or social intercourse between the people of Panama and the other states of Colombia. The various seditions and insurrections we have been called upon to repress in Panama have been political, and were promoted by factions that disputed the authority of the Colombian government. In these duties, under our treaty engagements with Colombia, we have incurred much

ill-will among certain classes in Panama, which has been increased by recent events. So that it would not be safe to attempt to take over and complete the Panama canal, unless we are given such control over the cities of Panama and Colon, and over a much wider area than a canal belt of ten miles breadth, as would enable us to suppress these unruly elements on the canal line.

In addition to this very unfavorable situation, the population of the region included in a canal belt at Panama is of a low order and very turbulent. They have little agricultural employment, and there are no manufactures there. Nearly all the work they do is for the canal and railroad; the laborers who come from other countries are without permanent homes, and the settled population is but little better. To displace these people is impracticable, and to govern them by force would be a doubtful task involving a dangerous problem. Under such conditions, they would never be our real friends, if they were not found in open hostility to us.

Nicaragua and Costa Rica, with ports on both oceans, nearer to our Gulf ports by 300 miles, and to our Pacific ports by 500 miles, than Colon or Panama, have a valuable and rapidly increasing trade with the United States, which the Nicaragua canal would develop into a great commerce. The narrow and swampy isthmus of Panama has no trade of any importance and never can have.

Our acquaintance with the Nicaragua and Costa Rica people is far more general than with the people of Panama. They welcome our people as immigrants and encourage them in forming settlements in their countries, of which there are several that are very prosperous.

There is no other place where the project of the ownership and control of a canal by one nation, within the sovereign limits of other nations, could be so well secured against international jealousy and interference as on the Nicaragua route. The great artery of the San Juan river flows between Nicaragua and Costa Rica; and, if canalized, it will supply the life blood of commerce to both states, placing them in the centre of the equatorial belt of navigation around the world, by ships that will pass through the gates that connect all oceans and seas into one body, leaving no seaport without an ocean highway to every coast and seaport on the globe.

The very existence of these states would equally depend upon the preservation and innocent use of this canal, and they would defend it, in their seaports and on land, with all their strength, against invasion. They would equally protect it against each other, should occasion require. Neither state could be tempted to make the rash effort to capture the canal and become its exclusive owner, for the great Republic of the United States would stand between them, as the owner of the canal, and would save it against all attack from either, or from any foreign assailant. This balancing of mighty interests, each committed to the preservation of the canal and its prosperity, would be such an ordering of the elements of peace, security and prosperity for Central America and for all the Powers concerned in the canal—indeed for all that navigate the seas—that it is to be hoped that such a providential opportunity shall not be lost through our weakness.

No such results can possibly be realized in Panama. If Colombia is supreme there, and if the department of Panama is subdued or reconciled to our exclusive ownership of the canal, there still remains the contest that will arise on the first serious dispute between the United States and Colombia, over the asserted rights of either party, or between Panama and the United States over a question of canal management or administration. The fifty years of controversy over the Clayton-Bulwer treaty would become a pleasant memory, compared with the irritations of such a quarrel, which only wars could settle. A quarrel in which any of the Latin American states would be involved with us, over a question of jurisdiction, has more of danger in it to the Western Hemisphere than the human mind can conceive, and we should, above all things, avoid such a possible event. In such a quarrel, the Monroe doctrine would disappear as a mist of the morning, and the French people—our revered friends—would be provoked into bitterness towards us for having aided those who have robbed them in this last, fatal act of spoliation. It is better to wait until Colombia and France have asked us to proceed, than to accept this fruitless scheme, while its environment is such as it is now, even as a gift, or to enter into a bargain with the perpetrators of wrong, to the alleged disadvantage of their victims.

If the Panama canal is the route we should adopt, if that route alone is practicable, or is best suited to the interests, welfare and safety of the people of the United States, let Congress muster the

courage so to declare; and, when that has been done, let us wait until Colombia and the people and government of France have offered the canal to the United States on the basis of the Hay-Pauncefote treaty. Let us dismiss the Nicaragua canal to the possession of those who may choose to construct it, and take the risks of controversy that dealings with Colombia will involve. Sincerity of action is what the people demand of Congress, and the courage to do what is right. Another demand they make, that cannot be mistaken. It is that the good name of the people of the United States shall be saved from the reproach of the Panama scandals that have so deeply grieved the people of France.

No practical question connected with canal construction is so important as that of the healthfulness of the route to be selected. According to the report of the Isthmian Canal Commission,—who did not summon a doctor to assist them in their investigations—and the evidence taken before the Senate Committee, the Panama route passes through a region where yellow fever and Chagres fever have their constant habitat, and where, during the past fifty years, and for long periods before, many thousands of lives have been destroyed, the records of which have not been published, if they were kept, for reasons of a commercial sort. The difficulty of obtaining laborers, had the facts been revealed, would have been so great that it was inexpedient to permit them to be known.

This state of facts is met by some testimony to show that the malignity of these and other diseases has abated to some considerable extent along the Panama route, and by the confident prophecy that, in the future, that country will be healthy. On the other hand, the records and the proof before the Senate Committee show that the Nicaragua route has been absolutely free from yellow fever, and from any form of epidemic disease; although large bodies of men have been working there under every form of exposure in the water and on dry land, and in all sorts of labor, for years together. The record of Nicaragua and Costa Rica for health, at all elevations and under all conditions, compares favorably with any part of the coast country of our Southern States. This established fact is met by a prophecy that Nicaragua will be as trying to health as Panama when canal construction is under full operation. The facts, as to healthfulness, are in favor of Nicaragua, but the prophecy is against it;

whereas the facts are against Panama, while the prophecy is in its favor.

In this situation the Senate Committee could not fail to affirm what the world knows to be true, that there are few places on the earth, if any, that have a worse health record than Panama. The record is so uniform and notorious that no traveller has written about Panama who has not uttered a warning as to the dangers of that climate.

If these actual conditions are to be changed, as to the future, by the mere prophecies of civil engineers, who have no unusual skill in hygienic matters, the undisputed facts remain, that cannot be removed by conjecture or disproved by forecasting the future. The two great facts which have been responsible for the unhealthfulness of the Panama route cannot be overcome by hygienic measures, and will be the same in the future as they have been in the past. The first is that yellow fever and Chagres fever are always found in the city of Panama, that the tide from the Pacific runs in daily to an elevation of twenty feet over a bottom of coral rock and mud, which is so shallow that merchant ships cannot approach the wharves nearer than from three to four miles, and that, when the tide runs out, a vast area of this surface is exposed to the direct rays of a torrid sun, which decompose the animal and vegetable matter brought in by the sea and the Rio Grande and other rivers, at or near the mouth of the canal. The second and fatal fact is, that there is no wind, for long periods, to blow away these poisonous gases, and they settle at night upon the cooler surface of the earth inland. It is beyond the wit or power of man so to change these natural conditions as to make Panama anything else than the nursery of malignant fevers, or to prevent it from infecting those people who have not become immune. Imported laborers cannot work along that canal line and under that tropical sun and escape sickness or death, in a very heavy percentage.

One fact alone would forbid the Panama experiment, if humanity is a factor in the problem. It is the fact that no sanitation is possible in the Bay of Panama, so long as the winds cease to blow there, and the ebbing tides leave thousands of acres of mud exposed to the tropical sun. No such condition is possible in any part of the valley of the San Juan River, or at Greytown, or in the lakes, or at Brito, or at San Juan del Sur. The Isthmian Canal

Commission have either omitted to include the health of the Panama region, as a factor in the unit price of labor, or as a factor in computing the time it will require to complete the work; or else they have done injustice to the Nicaragua route, by giving it no credit for its health record.

It cannot be doubted by practical men, that the same amount of work can be done on the Nicaragua route, at a lower cost for labor than on the Panama route. Every man from the United States who is employed by the Panama Railroad Company is allowed two months furlough, with three-fourths full pay, in each year, to enable him to combat the dangerous effects of that climate.

The descriptions given by the witnesses before the Senate Committee, of the evident cause of sickness at Panama, closely correspond with the personal observations of Humboldt, in describing his travels in the countries of Central America in the early days of the nineteenth century.

The outlook for health in Panama and the adjacent country is unquestionably bad, and must continue to be bad under the conditions that exist and have always existed there, since the earliest times of its occupation by Spanish and other immigrants. By comparison with any other American port, except Porto Bello, it is excessively bad. The causes are permanent and natural. They cannot be overcome by any sanitary expedients.

They are alike at war with human life and the life of commerce. Panama is, at almost all seasons, the dead centre of barometric pressure, where the winds cease and the infected atmosphere is stagnant, and there is no propelling power for sailing ships. A more unfortunate terminal for a ship canal could scarcely be found.

Europeon emigration that is so much needed on our Pacific slope, whether by steam or sailing ships, would be so greatly endangered by a passage through Panama from the Caribbean Sea to the Pacific, that it would be practically cut off. On a sea voyage from a European port to our Pacific coast, in which the emigrant could bring with him his family and household effects on an unbroken journey, the class of people who would seek ocean transportation would be much higher than those who must find their way to the Pacific slope over long lines of railroad, with frequent breaks in the course of the toilsome journey. They could not afford the risk of life in passing through a region infected with

deadly fevers, and they have, in the past, shunned the Panama route. With direct steamship connections between Colon and many European ports, and between Panama and San Francisco, the passage of emigrants through the isthmus has been almost at zero, according to the traffic reports of the Panama Railroad Company.

The conjectures and forecasts of those who base all their calculations, as to the commercial uses of an isthmian ship canal, upon the supposition that sailing ships will be displaced by steam ships, in ocean transportation, are met by stubborn facts. The present tonnage of enrolled and registered sailing vessels of the United States is 2,603,265 gross tons, and that of steam ships is 2,920,935—the excess of steam tonnage being only 317,670 tons. But the number of sailing ships is 972, while the steam vessels number 355, or nearly three sailing vessels to one steamer. As the Isthmian Canal is for "the people who go down to the sea in ships," and is not exclusively for corporate or other associations who own great lines of costly steamers, a just provision should be made for the sailing ships we now have, if no other such ship should ever be built.

But the conjecture that sailing ships must pass out of ocean navigation to give place to steamers is pessimistic in a terrible degree, and strikes down the mother industry of all commercial transportation. In the deposition of General Alexander, he states the true relation between steam ships and those propelled by winds, as follows:

"It seems to me that to rule out the sailing vessels forever from this country, in building this canal, is monstrous. The sailing vessel is not only very important in itself, but it is the basis of the rates made by the steamships, and the rates made by the steamships are the basis of the railroad rates in the country, so that practically all the rates in the United States are finally based at the bottom of the sailing vessels."

The route by way of Panama is practically impossible to a sailing vessel. In fact, as is clearly shown by the testimony before the Senate Committee, the relative growth of steam ships, as compared with sailing ships, in recent years, is changing, as the methods of rigging and handling sailing ships are improved, and their tonnage is increasing. The percentage of increase in sailing ships is growing in America, and in Norway and France it is greater than that of steam ships, in tonnage and numbers. Great Britain has built steam ships for thirty years past, with an eager-

ness that she now regrets, in order to utilize the Suez passage, to sustain her commercial prestige, and to provide new grooves of commerce for her merchants, to new and distant ports; while France and Norway have steadily encouraged sailing craft, and are dangerous competitors in the transportation of the cheap and heavy commodities.

France has no coal to spare from home consumption, and Great Britain is witnessing the sale of American coals in her cities. How much longer she can afford to supply her steamers with coal mined in the United Kingdom is now a grave problem. This is also true as to Germany. When the British and German supply is exhausted, America must bear the brunt of supplying the world's steam marine, and we will, for a time, greatly increase the income of the coal fields by increased prices; but the people and the industries will share the tax with the steam ships; and that best feature of commerce—cheap transportation—will recall the sailing ship to its rightful place, as the mother of ocean transportation. No more frightful condition could be visited upon the world's commerce, than to strip the sails from all ships and put steam machinery in their hulls.

If we are preparing an isthmian canal for the exclusive use of steam ships, on the futile conjecture that sailing ships are doomed to pass away, our task is idle. To doom sailing ships to continue to pass through the dangerous seas around the Horn, and to add 10,000 miles to each voyage made by such vessels from our Atlantic ports to the North Pacific, for the benefit of steam ships, would be the height of injustice; and to turn over the coasting trade to steam ships plying between the oceans would be to rob one industry to enrich another.

If we adopt the Panama route no sailing ships will use it, for the simple reason that nature refuses to supply winds in the calm belt, which reaches from five to eight hundred miles westward and nearly three hundred miles northward in the Pacific Ocean, off the Bay of Panama. The proof is conclusive as to this fact, and is as certain and undeniable as that the Gulf Stream runs between Cuba and Florida.

Turning to the route through Nicaragua, and comparing it with the Panama route, we see from the chart prepared by our Bureau of Hydrography, that the trade winds, which are the steady supply of motive power for sailing ships on the great

oceans, pass through the Nicaraguan depression, with constancy and concentrated force, and across the Pacific to the coast of China. The chart shows that they are perennial and always reliable. They bring healing in their wings, and fan the heated land until it becomes a temperate zone and makes Nicaragua a salubrious region, inviting to industry and rich in its rewards to labor. In this statement there is not the least color of exaggeration.

The hydrographic chart from the Navy Department, the result of actual and long-continued examinations, settles the fact that the trade winds from the Atlantic, which are practically perpetual, pass across the depression that contains the lakes of Nicaragua, in an unbroken sweep from Greytown to Brito, along the valley of the San Juan River. Here is a force of nature that moves across the Pacific to the coast of China to carry our commerce, as we hope, to important markets, through "an open door." Its constancy is shown by the rainfall at Greytown, as is clearly demonstrated in the testimony of Mr. Lyman E. Cooley, who says:

"I know of no reason for the excessive rainfall at Greytown, as compared with Limon and Bluefields, 60 miles away, except the drawing in of the trade winds by this trough across the continent acting like a funnel, by which is brought in double the amount of saturated air, which precipitates double the amount of moisture; so you have across that part of the isthmus double the air circulation, after the moisture is squeezed out of it."

Every test has been applied in Nicaragua and Costa Rica to determine the healthfulness of the climate, that has been applied in Panama, and the result, without exception, is conclusive in favor of Nicaragua.

Our consuls—Donaldson, residing on the lake shore at Managua, and Sorsby, residing on the coast at Greytown, for years together, and raising their children in those localities—give in their depositions a remarkable record of health and comfort. Quite as conclusive is the experience of General Alexander, who, as commissioner to locate the boundary between Costa Rica and Nicaragua, resided for more than three years at Greytown.

It is not stated that any of the foreign-born employees of the Panama canal, or railroad company, reside permanently with their families at Panama or Colon. On the contrary, it has been the rule as to railroad employees, for fifty years, to give them

leave of absence, on pay, for two months in every year and free transportation to the United States to enable them to recover from the effects of the climate, which would otherwise be fatal to them.

The soldiers in Panama, in the present outbreak there, and in all previous service in the field, have been sick with yellow fever and Chagres fever, as is stated by several witnesses, and especially by Mr. Paine, the present superintendent of the Panama Railroad. We have the testimony of Col. Worthington, who was in the field with William Walker in his Nicaraguan campaign, that no sickness of a serious or epidemic character affected the soldiers engaged in that war, in which more than 2,000 men were engaged, for more than two years. Mr. Treat's deposition contains a narrative of actual experience in railroad building, from Greytown to the Divide, a distance of ten miles, through swamps and bodies of stagnant water, that proves the actual healthfulness of that region. He had in his employment 2,000 men for seven months, among whom only two deaths occurred.

When such facts are contrasted with the fearful epidemics that swept off unnumbered and unnamed thousands in Panama, the mind refuses to accept the proposition, that Panama is, or has been, or ever can be made, as healthy a country as Nicaragua, or that it ever can be reclaimed from the fatal fevers that have made it a Golgotha.

Such is, also, Mr. Plume's testimony, who was track-master for six years on the Panama railroad, and Dr. Bransford's testimony, who was surgeon of the Lull and Menocal surveys in Panama and Nicaragua.

The average distance between our Atlantic and Pacific ports is increased by 600 miles, if the voyage is made through Panama instead of Nicaragua. On a round trip, the increase is 1,200 miles. If a steamer can make one round trip each month between our Atlantic and Pacific ports, the distance lost on the Panama route, in a year, as compared with the route through Nicaragua, would be 14,400 miles. If her speed is three hundred miles a day, her lost time in a year would be 48 days. If it costs her $150 a day, her loss for a year would be $7,200; in 20 years, the average life of a ship, it would be $144,000.

Assuming that the income of the canal would be $8,000,000, at one dollar per gross ton for tolls, and that the ships that pass

through the canal are each of 5,000 tons measurement, the number will be 800 per annum, making round trips. The increase of distance by the Panama route over the Nicaragua route for these 800 ships, for each year, would be 11,520,000 miles.

If it costs each ship $150 a day, the number of days being 48 for each ship, and 38,400 for 800 ships, the aggregate cost would be $5,760,000, and this would be the saving for steamships on the Nicaragua route every year. Half of this sum capitalized at five per cent. is $57,600,000, or nearly half the estimated cost of the Panama Canal.

These calculations are based alone on the transit of steamers through the Panama canal. Sailing ships are dropped from the calculation, by all parties, because they are impracticable on the Panama route.

The Bay of Panama is a neglected feature of the Isthmian Canal Commission's report. They treat it as an open and deep sea, entering from the ocean and furnishing a safe anchorage behind some islands four miles from the shore. It is quite the reverse. The navigation of the canal actually begins 100 miles from the pier at La Boca, where pilots are taken on the ships, and it is tortuous from the sea to the anchorage. The real navigation of the canal begins at the 35-foot curve, which is at least three miles from the canal entrance at Colon, and extends to the Pacific, which is 100 miles from the canal entrance at La Boca.

To ascertain the single fact which is the actual basis of the possibility of a canal at Panama—namely, the safety of a dam at Bohio—the plan of construction of the dam is the indispensable factor. Construction by monolithic masonry—such as in the dam at Conchuda on the San Juan River—is agreed upon as a safe and sure plan by all the engineers of the Isthmian Canal Commission and by all the other engineers who have testified on the subject. This sort of a dam is, therefore, the standard for a canal to be built by the government. The Commission, however, lower the standard of the dam at Bohio from a structure of monolithic masonry to one with a core of concrete, with earth facings on both sides, and a possible rock pavement on the top. This is done to get a cheaper dam at Bohio, and not so good as the dam at Conchuda that costs $6,062,972 with all wasteways, sluices, machinery and approach channels.

In giving a preference to the Panama route, they provide a structure of less strength at Bohio, which costs, for the dam	$6,369,640
And for the double locks, which are set in an extension of the dam, and are part of that structure	11,567,275
	$17,936,915
To which is added:	
Gigante Spillway	$1,209,419
Lake Bohio	2,952,154
Peña Blanco outlet	2,448,076
Chagres diversion	1,929,982
Railroad diversion	1,267,500
	$9,807,131

In all, the dam, and its necessary adjuncts, would cost $27,744,046.

All this vast sum is the direct result of, and is unavoidably connected with, and is, in fact, part of the plan for the dam at Bohio.

This vast sum is to be risked on a plan that has no precedent in engineering experience, and it does not include a temporary dam at Bohio, the cost of which is estimated as being not below $500,000, and the necessity for which all engineers admit. The difference in the cost of these dams, each of which is a vital factor in the plan of the Isthmian Canal Commission, is $16,983,120 in favor of the dam at Conchuda, while the dam at Bohio compares with that at Conchuda as a scrap heap compares with a wall of steel.

The recommendations of the Isthmian Canal Commission are simply tentative and not final. They are so stated that they can give way to any plan for a dam that the constructing engineers may adopt, after further examination. This uncertainty is painful. It is disastrous because it affects the vital point in the Panama system of a canal with locks. If the dam at Bohio fails, all is gone and the canal is lost.

Until that canal has withstood the heaviest and most crushing floods that the Chagres River can precipitate upon it, no engineer and no sane man will feel safe against the total and irreparable loss of the entire Panama canal.

Of six engineers on the Commission, two, Morrison and Haupt, declare the dam at Bohio to be hazardous, beyond the extreme line of engineering experience; and the other four differ in the firmness of their convictions as to the certainty of success, and

also as to the manner of overcoming the difficulties that startle their fears. Congress must act on facts that are ascertained by methods entirely satisfactory to the science of engineering. Such facts, confessedly, have not been ascertained at Bohio.

The borings are 50 to 100 feet apart, at irregular intervals, and none of them were made with the diamond drill. Not one of them penetrated the rock to determine whether it was solid, or was only a bowlder that had drifted into the geological valley in which it was found. They are admitted to be insufficient in number to justify the final location of the dam. The borings are across a deep geological rut, or gorge, called a valley, which was either cut out with rushing waters that poured through it in former times, or was broken out with uplifting forces of earthquakes or volcanoes. It then filled up, a distance of 127 feet to sea level, with alternating layers of gravel, sand and clay, washed in by the flow of the Chagres and other streams.

The French engineers, to avoid the search for rock foundations in a gulch so uncertain in its shape and depth, at once discarded the idea of a dam of masonry, and adopted that of a clay dam based upon this assorted collection of *detritus*. No dam, probably, ever had such a variety of materials beneath its foundations.

Mr. Morrison follows the French idea, which they derived from Menocal, who first suggested it. If it is safe, it is cheap and easy. If it is not safe, it is utterly disastrous.

Five engineers, including Menocal, say it is not safe for so important a work as is required at Bohio, to resist the extraordinary ravages of floods in the Chagres River, and Cooley concurs with them; while Morrison and Abbott insist that it is as safe as a masonry dam would be at Bohio. Unless safety can be found in the disagreements of great engineers, no safety can be found as to the dam at Bohio.

As it is admitted by all engineers that Bohio is the only point where a dam can be placed on the Chagres River, to impound the waters for the supply of 21 miles of the summit level of the Panama canal, and that without such a dam the canal cannot be supplied and the Chagres River cannot be controlled, the degree of certainty that common-sense and all engineering experience require, certainly beyond a reasonable doubt, cannot be found in the Panama scheme. It is very far from being true that this degree of certainty exists on the ascertained facts in this case, or

that it is even reasonably probable that these basic facts will ever be found to exist.

On the contrary, facts were ascertained by De Lesseps in his great effort, at enormous expense, to construct a sea-level canal which, if they were examined carefully, would go far to show that a dam at Bohio will never be a safe reliance on which to rest the fate of a lock canal across the isthmus of Panama.

It was not the depth of the cut at Culebra that caused the old company to abandon a sea-level canal. It was the danger that the floods of the Chagres River could not be controlled, and that they would rush into the canal and destroy it.

Why do they not dig a sea-level canal and get rid of these doubts as to the Bohio dam? The answer is the same that Admiral Ammen and Mr. Menocal gave to the Paris Conference, and the same that the *Comité d'Études* and the *Comité Technique* gave in their reports, namely, that the Chagres River cannot be kept out of a sea-level canal and will destroy it. A canal filled with sea water, with a tide of 20 feet upon that, cannot afford to take in the waters of the Chagres even at low tide. The Chagres River drives the engineers away from a sea-level canal, as it will drive away their lakes and dams erected for its control.

In the face of such difficulties and doubts on the Panama route, none of which exist on the Nicaragua route, the choice of routes is a simple matter of common-sense which all can understand.

De Lesseps understood the advantages for a canal, with locks, at Nicaragua, and it was only when he failed to obtain a concession that he turned his attention to a sea-level canal at Panama; and that canal he failed to build after spending $250,000,000 of the money of the French people in the effort. Our Commissioners estimate that it would require $144,233,358 to complete the canal at Panama and save the $250,000,000 already expended upon it. But they cannot induce France, or the French people, to furnish that comparatively small sum; the reason being, not that they are poor, but that they are unwilling to spend more money on the doubtful success of a dam at Bohio.

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